Amendment to the claims:

Claims 1-18 (Canceled)

Claim 19. (Withdrawn) A method for refining a semiconductor wafer having a semiconductor wafer surface comprising the steps of:

providing at least two refining elements;

holding the semiconductor wafer for refining; and

applying at least two different, independent operative refining motions to the at least two refining elements and wherein the operative refining motions include at least one electrochemical action during at least a portion of a refining cycle time.

20. (Withdrawn) The method for refining according to claim 19 wherein:

the semiconductor wafer has an assigned tracking code;

and before applying at least two different, independent operative refining motions, the method having the additional steps of:

providing an operative control subsystem having an operative sensor, a controller, and a processor;

and during applying at least two different, independent operative refining motions, the method having the additional steps of:

sensing a progress of refining information with the operative sensor;

determining a change for at least one control parameter using at least in part at least a process model, the assigned tracking code, information in at least one memory device, and the progress of refining information with the operative control subsystem; and

changing in real time the at least one process control parameter which changes the refining.

Claim 21. (Withdrawn) The method according to claim 20 wherein the semiconductor wafer has a low k layer having a k value of at most 3.5.

Claim 22. (Withdrawn) A method of removing an unwanted material from a semiconductor wafer having a tracking code and a semiconductor wafer surface comprising:

a step (A) providing a refining element having a refining surface and having a first operative electrode;

a step (B) positioning the semiconductor wafer surface with a holder having an operative electrical contact forming a second operative electrode proximate to the refining element;

a step (C) applying an operative refining motion comprising a parallel operative refining motion in the interface between the semiconductor wafer surface being refined and the refining surface of the refining element; and

a step (D) applying refining energy across the first operative electrode and the second operative electrode for electro-refining to remove the unwanted material on the semiconductor wafer surface during at least a portion of a refining cycle time;

a step (E) sensing progress information of the refining of the semiconductor wafer surface with an operative control subsystem having access to a process model and a historical performance;

a step (F) determining at least one improved control parameter using at least in part at least the process model, the tracking code, the historical performance, and the progress information with the operative control subsystem; and

a step (G) controlling in real time the at least one process control parameter to change the refining.

Claim 23. (Canceled) The method of claim 22 wherein:

in step (A) the refining element has an identification code;

in step (F) the operative control system has access to the identification code and the determining at least one improved process control parameter comprises using at least in part at least the process model, the tracking code, the historical performance, the refining element identification code, and the progress information with the operative control subsystem;

Claim 24. (Withdrawn) A method for refining comprising:

a step (A) applying a refining energy to a workpiece with a refining element;

a step (B) providing an operative control subsystem having an operative sensor, a controller, and a processor;

a step (C) sensing progress of refining information with the operative sensor during a period of non-steady refining;

a step (D) determining a change for at least one improved control parameter using at least in part at least

(i) a process model,

(ii) an assigned workpiece tracking code,

(iii) information in at least one memory device, and

(iv) progress of refining information with the operative control subsystem during the period of non-steady refining; and

a step (E) changing in real time the at least one process control parameter which changes the refining during the period of non-steady refining.

Claim 25. (Withdrawn) The method according to claim 24 wherein the step (C), the step (D), and the step (E) are repeated at least 4 times during a single period of non-steady state refining.

Claim 26. (Withdrawn) The method according to claim 24 wherein:

the refining element has a refining element tracking code; and

in step (D) determining a change comprises determining a change for at least one improved control parameter using at least in part at least

(i) the process model,

(ii) the assigned workpiece tracking code,

(iii) the information in at least one memory device,

(iv) the refining element tracking code; and

(v) progress of refining information with the operative control subsystem during the period of non-steady refining.

Claims 27-32 (Canceled)

Claim 33. (Currently amended) A method of refining ~~of~~ a first and a second layer on a semiconductor wafer, each having an effect on the cost of manufacture, the method comprising:

~~a step (1)~~ applying a first refining energy to the first layer of the semiconductor wafer for a first layer refining;

~~a step (2)~~ sensing a real time process information for the first layer of the semiconductor wafer during the first layer refining with an at least one operative sensor for the first layer refining;

~~a step (3)~~ determining an improvement in real time for an at least one ~~improved~~ first layer control parameter "A" using a ~~first~~ tracking code for the semiconductor wafer and ~~a real~~ the real time ~~progress~~ process information for the first layer of ~~for~~ the semiconductor wafer with an operative control subsystem for the first layer refining; ~~subsystem having the at least one operative sensor;~~

~~a step (4)~~ controlling in real time the at least one first layer process control parameter "A" to change ~~the~~ a first semiconductor wafer surface during the first layer refining of the first layer of the semiconductor wafer;

~~a step (5)~~ storing for future availability a stored information related to the at least one first layer process control parameter "A", the ~~first~~ tracking code for the semiconductor wafer, and the real time ~~progress~~ process information for the first layer of the semiconductor wafer; ~~the first layer refining;~~

~~a step (6)~~ applying a second refining energy to the second layer of the semiconductor wafer having at least one second layer control parameter "B" for a second layer refining;

~~a step (7)~~ sensing a real time process information for the second layer of the semiconductor wafer during the second layer refining with ~~the~~ an at least one operative sensor for the second layer refining;

~~a step (8)~~ determining an improvement in real time for an at least one ~~improved~~ second layer control parameter "B" using at least a portion of the stored information related to the tracking code for the semiconductor wafer, the ~~first layer~~ real time process ~~progress~~ information for the first layer of the semiconductor wafer, and the ~~second layer~~ real time process ~~progress~~ information for the second layer of the semiconductor wafer with ~~the~~ an operative control subsystem for the second layer refining; and

~~a step (9)~~ controlling in real time the at least one second layer process control parameter "B" to change ~~the~~ a second semiconductor wafer surface during the second layer refining of the second layer of the semiconductor wafer: and ~~wafer.~~

using an at least one process model and using predictive control during the method.

Claim 34. (Currently amended) The method according to claim 33 wherein ~~the step (4)~~ controlling in real time the at least one first layer process control parameter "A" comprises controlling in real time the at least one first layer process control parameter "A" to change ~~the~~ a removal of material from the first semiconductor wafer surface during the refining of the first layer of the semiconductor wafer.

Claim 35. (Currently amended) The method according to claim 33 wherein ~~the step (1)~~ ~~of~~ applying the first refining energy comprises applying at least two independent refining energies.

Claim 36. (Currently amended) The method according to claim 33 wherein ~~the step (1) of~~ applying the first refining energy comprises applying at least two different refining energies.

Claim 37. (Currently amended) The method according to claim 33 wherein ~~the step (1) of~~ applying the first refining energy comprises applying at least two different, independent refining energies.

Claim 38. (Currently amended) The method according to claim 33 wherein ~~the step (1) of~~ applying the first refining energy comprises applying at least one electrochemical energy for removing material from the first semiconductor wafer surface.

Claim 39. (Canceled) The method according to claim 33 wherein the step (1) of applying the first refining energy comprises applying at least one electrochemical energy for adding material to the first semiconductor wafer surface.

Claim ~~39.~~ 40. (Canceled-currently amended) The method according to claim 33 wherein the step (9) of controlling in real time the at least one second layer control parameter "B" comprises controlling in real time the at least one second layer process control parameter "B" to change the a removal of material from the second semiconductor wafer surface during the refining of the second layer of the semiconductor wafer.

Claim ~~40.~~ 41. (Currently amended) The method according to claim 33 wherein ~~the step (6) of~~ applying the second refining energy comprises applying at least two independent refining energies.

Claim ~~41.~~ 42. (Currently amended) The method according to claim 33 wherein ~~the step (6) of~~ applying the second refining energy comprises applying at least two different refining energies.

Claim ~~42.~~ 43. (Currently amended) The method according to claim 33 wherein ~~the step (6) of~~ applying the second refining energy comprises applying at least two different, independent refining energies.

Claim ~~43.~~ 44. (Currently amended) The method according to claim 33 wherein ~~the step (6) of~~ applying the second refining energy comprises applying at least one electrochemical energy for removing material from the second semiconductor wafer surface.

Claim ~~44.~~ 45. (Currently amended) The method according to claim 33 wherein ~~the step (6) of~~ applying the second refining energy comprises applying at least one electrochemical energy for adding material to the second semiconductor wafer surface.

Claim ~~45.~~ 46. (Currently amended) The method according to claim 33 wherein:

~~the step (4)~~ controlling in real time the at least one first layer process control parameter "A" comprises controlling in real time the at least one first layer process control parameter "A" to change ~~the~~ a removal of material from the first semiconductor wafer surface during the refining of the first layer of the semiconductor wafer; and

~~the step (9) of~~ controlling in real time the at least one second layer process control parameter "B" comprises controlling in real time the at least one second layer process control parameter "B" to change ~~the~~ a removal of material from the second semiconductor wafer surface during the refining of the second layer of the semiconductor wafer.

Claim ~~46.~~ 47. (Currently amended) The method according to claim 33 wherein:

~~the step (1) of~~ applying the first refining energy comprises applying at least two independent refining energies; and

~~the step (6) of~~ applying the second refining energy comprises applying at least two independent refining energies.

Claim ~~47.~~ 48. (Currently amended) The method according to claim 33 wherein:

~~the step (1) of~~ applying the first refining energy comprises applying at least two different refining energies; and

~~the step (6) of~~ applying the second refining energy comprises applying at least two different refining energies.

Claim ~~48.~~ 49. (Currently amended) The method according to claim 33 wherein:

~~the step (1) of~~ applying the first refining energy comprises applying at least two different, independent refining energies; and

~~the step (6) of~~ applying the second refining energy comprises applying at least two different, independent refining energies.

Claim ~~49.~~ 50. (Currently amended) The method according to claim 33 wherein:

~~the step (1) of~~ applying the first refining energy comprises applying at least one electrochemical energy for removing material from the first semiconductor wafer surface; and

~~the step (6) of~~ applying the second refining energy comprises applying at least one electrochemical energy for removing material from the second semiconductor wafer surface.

Claim ~~50.~~ 51. (Currently amended) The method according to claim 33 wherein:

~~the step (1) of~~ applying the first refining energy comprises applying at least one electrochemical energy for adding material to the first semiconductor wafer surface; and

~~the step (6) of~~ applying the second refining energy comprises applying at least one electrochemical energy for adding material to the second semiconductor wafer surface.

Claim ~~51.~~ 52. (Withdrawn-currently amended) A magnetic refining element comprising:
at least one magnetically responsive refining member having at least one electrode;
at least one refining surface; and
wherein the magnetic refining element has an identification code.

Claim ~~52.~~ 53. (Withdrawn-currently amended) The magnetic refining element of claim ~~51~~ 52 wherein the at least one magnetically responsive refining member has at least two electrodes.

Claim ~~53.~~ 54. (Withdrawn-currently amended) The magnetic refining element of claim ~~51~~ 52 wherein the at least one magnetically responsive refining member has at least two different refining surfaces.

Claim ~~54.~~ 55. (Withdrawn-currently amended) The magnetic refining element of claim ~~51~~ 52 wherein the refining surface comprises at least in part a finishing surface free of abrasive particles.

Claim ~~55.~~ 56. (Canceled-currently amended) An apparatus for refining a workpiece surface comprising:
at least one magnetically responsive refining element free of any nonmagnetic driving mechanism;
at least one magnetic driving element; and

a holder for a workpiece which exposes the workpiece surface for refining.

Claim ~~56.~~ 57. (Canceled-currently amended) The apparatus according to claim ~~55~~ 56 wherein the at least one magnetically responsive refining element has a refining element tracking code.

Claim ~~57.~~ 58. (Canceled-currently amended) The apparatus according to claim ~~55~~ 56 further comprising an operative control subsystem having an operative sensor, a controller, and a processor.

Claim ~~58.~~ 59. (Canceled-currently amended) The apparatus according to claim ~~57~~ 57 wherein:

the at least one magnetically responsive refining element has a refining element tracking code; and

the processor has access to the refining element tracking code.

Claim ~~59.~~ 60. (Canceled-currently amended) The apparatus according to claim ~~57~~ 58 wherein:

the at least one magnetically responsive refining element has a refining element tracking code;

the processor has access to the refining element tracking code; and

wherein the processor has access to a processor readable media having processing instructions which use the refining element tracking code to determine improved control during a refining cycle time.

Claim ~~60.~~ 61. (Canceled-currently amended) The apparatus according to claim ~~57~~ 58 wherein:

the at least one magnetically responsive refining element comprises at least two magnetically responsive refining elements and the at least two magnetically responsive refining elements have at least two different refining element tracking codes;

processor has access to the at least two different refining element tracking codes; and

wherein the processor has access to a processor readable media having processing instructions which use the refining element tracking code to determine a change for at least one control parameter during a refining cycle time.

Claim ~~61.~~ 62. (Withdrawn-currently amended) An apparatus for refining comprising:

at least one magnetically responsive refining element having a tracking code;

a refining element placement arm having a electromagnet for lifting, placing, and releasing the magnetically responsive refining element; and

an operative sensor to sense the tracking code; and an operative controller to control the refining element placement arm for lifting, placing, and releasing the magnetically responsive refining element.

Claim ~~62.~~ 63. (Canceled-currently amended) The apparatus according to claim ~~61~~ 62 wherein:

the at one least one magnetically responsive refining element comprises at least two magnetically responsive refining elements;

and the apparatus further comprising at least two magnetic driving elements.

Claim ~~63.~~ 64. (Canceled-currently amended) The apparatus according to claim ~~61~~ 62 wherein:

the at least one magnetically responsive refining element comprises at least two magnetically responsive refining elements and the at least two magnetically responsiv refining elements have at least two different refining element tracking codes;

and the apparatus further comprises:

at least two magnetic driving elements;

an operative control subsystem having an operative sensor, a controller, and a processor and wherein the processor has access to the at least two different refining element tracking codes; and

wherein the processor has access to a processor readable media having processing instructions which use the at least two different refining element tracking codes to determine a change for at least one control parameter during a refining cycle time.

Claim ~~64.~~ 65. (Canceled-currently amended) The apparatus according to claim ~~63~~ 64 wherein the processing instructions include controlling the at least two magnetically responsive refining elements with different refining motions during the refining cycle time.

Claim ~~65.~~ 66. (Canceled-currently amended) The apparatus according to claim ~~63~~ 64 wherein the processing instructions include controlling the at least two magnetically responsive refining elements with independent refining motions during at least the refining cycle time.

Claim ~~66.~~ 67. (Canceled-currently amended) The apparatus according to claim ~~63~~ 64 wherein the processing instructions include instructions for controlling the at least two magnetically responsive refining elements with different, independent refining motions during at least the refining cycle time.

Claim ~~67.~~ 68. (Withdrawn-currently amended) An apparatus for refining a workpiece surface comprising:

at least two refining elements having at least two different identification codes;

at least two driving mechanisms for at least two refining motions for the at least two refining elements during at least a portion of the refining cycle time;

a holder for a workpiece which exposes the workpiece surface for refining; and

an operative control subsystem having an operative sensor, a controller, and a processor and wherein the processor has access to the at least two different refining element identification codes and wherein the processor has access to a processor readable media having processing instructions which use at least in part the at least two different refining element identification codes to determine a change for at least one control parameter during a refining cycle time.

Claim ~~68.~~ 69. (Canceled-currently amended) The apparatus according to claim ~~67~~ 68 wherein the at least two refining motions comprise at least two different refining motions during the refining cycle time.

Claim ~~69.~~ 70. (Canceled-currently amended) The apparatus according to claim ~~68~~ 69 wherein the at least two refining elements include at least one electrode.

Claim ~~70~~. 71. (Canceled-currently amended) The apparatus according to claim ~~67~~ 68 wherein the at least two refining motions comprise at least two independent refining motions during the refining cycle time.

Claim ~~71.~~ 72. (Canceled-currently amended) The apparatus according to claim ~~70~~ 71 wherein the at least two refining elements include at least one electrode.

Claim ~~72.~~ 73. (Canceled-currently amended) The apparatus according to claim ~~67~~ 68 wherein the at least two refining motions comprise at least two different, independent refining motions during the refining cycle time.

Claim ~~73.~~ 74. (Canceled-currently amended) The apparatus according to claim ~~72~~ 73 wherein the at least two refining elements include at least one electrode.

Claim ~~74.~~ 75. (Withdrawn-currently amended) At least three apparatus according to claim ~~67~~ 68 wherein:

each the at least three apparatus have at least two different refining element identification codes forming a family at least six refining element identification codes, each being different from each other;

each of the at least three apparatus have access to a processor has access to the family of at least six refining element identification codes; and wherein

the processing instructions comprise the processing instructions which use the family of at least six refining element identification codes to determine a change for at least one control parameter during a refining cycle time.

Claim ~~75.~~ 76. (Canceled-currently amended) The apparatus according to claim ~~74~~ 75 wherein the at least two refining elements include at least one electrode.

New claims:

Claim 77. (New) The method according to claim 33 wherein using an at least one process model comprises using at least in part a first principles process model and at least in part an empirically based process model for process control during the method.

Claim 78. (New) The method according to claim 77 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 77.

Claim 79. (New) The method according to claim 33 wherein using an at least one process model comprises using at least in part a first principles process model and at least in part an empirically based process model for process control during the method; and wherein the semiconductor wafer comprises a semiconductor wafer having a diameter of at least 300 millimeter; and additionally comprising:
using a refining element having a refining element identification code during the method.

Claim 80. (New) The method according to claim 79 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 79.

Claim 81. (New) The method according to claim 37 wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method.

Claim 82. (New) The method according to claim 81 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 81.

Claim 83. (New) The method according to claim 38 wherein using an at least one process model comprises using at least in part a first principles process model and at least in part an empirically based process model for process control during the method; and wherein the semiconductor wafer comprises a semiconductor wafer having a diameter of at least 300 millimeters.

Claim 84. (New) The method according to claim 49 wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method.

Claim 85. (New) The method according to claim 84 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 84.

Claim 86. (New) The method according to claim 49 wherein using an at least one process model comprises using at least in part a first principles process model; and additionally comprising:
using a refining element having a refining element identification code during the method.

Claim 87. (New) The method according to claim 86 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 86.

Claim 88. (New) The method according to claim 50 wherein using an at least one process model comprises using at least in part a first principles process model; and
wherein the semiconductor wafer comprises a semiconductor wafer having a diameter of at least 300 millimeters.

Claim 89. (New) The method according to claim 88 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 88.

Claim 90. (New) The method according to claim 51 wherein using an at least one process model comprises using at least in part a first principles process model; and
wherein the semiconductor wafer comprises a semiconductor wafer having a diameter of at least 300 millimeters.

Claim 91. (New) The method according to claim 90 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 90.

Claim 92. (New) The method according to claim 33 wherein at least one of applying a first refining energy or applying a second refining energy comprises applying an at least one electrochemical energy for adding material and wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0; and wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method

Claim 93. (New) The method according to claim 33 wherein at least one of applying a first refining energy or applying a second refining energy comprises applying an at least one electrochemical energy for removing material and wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0; and wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method.

Claim 94. (New) The method according to claim 93 wherein applying the first refining energy comprises applying at least two different independent refining energies or wherein applying the second refining energy comprises applying at least two different independent refining energies.

Claim 95. (New) The method according to claim 94 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 94.

Claim 96. (New) The method according to claim 33 wherein using an at least one process model comprises using at least in part a first principles process model for process control

during the method and wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0; and additionally comprising: using a refining element having a refining element identification code during the method.

Claim 97. (New) The method according to claim 96 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 96.

Claim 98. (New) The method according to claim 33 wherein at least one of applying a first refining energy and applying a second refining energy comprise applying at least one electrochemical energy for adding material and applying at least one electrochemical energy for removing material and wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0; and wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method.

Claim 99. (New) The method according to claim 98 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 98.

Claim 100. (New) The method according to claim 98 additionally comprising:

supplying a group of at least three apparatus wherein each member of the group of the at least three apparatus has at least two refining elements and at least two different refining element identification codes, the refining element identification codes forming a family of at least six refining element identification codes, each refining element identification code being different from each other and wherein each of the at least three apparatus includes at least two electrodes;

using an at least one processor having access to the family of the at least six refining element identification codes for the at least three apparatus; and

using a manufactured article having a processor readable medium with processor readable instructions which use the family of the at least six refining element identification codes to determine a change for an at least one control parameter during a refining cycle time.

Claim 101. (New) The method according to claim 33 wherein applying the first refining energy comprises applying at least two different independent electrochemical refining energies and wherein applying the second refining energy comprises applying at least two different independent electrochemical refining energies and wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0 and wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method.

Claim 102. (New) The method according to claim 101 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 101.

Claim 103. (New) The method according to claim 101 additionally comprising:

supplying a group of at least three apparatus wherein each member of the group of the at least three apparatus has at least two refining elements and at least two different refining element identification codes, the refining element identification codes forming a family of at least six refining element identification codes, each refining element identification code being different from each other and wherein each of the at least three apparatus includes at least two electrodes;

using an at least one processor having access to the family of the at least six refining element identification codes for the at least three apparatus; and

using a manufactured article having a processor readable medium with processor readable instructions which use the family of the at least six refining element

identification codes to determine a change for an at least one control parameter during a refining cycle time.

Claim 104. (New) The method according to claim 33 wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0; and wherein using an at least one process model comprises using at least in part a first principles process model for process control during the method.

Claim 105. (New) The method according to claim 104 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 104.

Claim 106. (New) The method according to claim 104 additionally comprising:
data mining the stored information.

Claim 107. (New) The method according to claim 33 wherein the semiconductor wafer comprises a semiconductor wafer having a low-k layer having a k value of at most 3.0; and wherein using an at least one process model comprises using at least in part a first principles process model and at least in part an empirically based process model for process control during the method; and additionally comprising:
using a refining element having a refining element identification code during the method.

Claim 108. (New) The method according to claim 107 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 107.

Claim 109. (New) The method according to claim 107 additionally comprising:

data mining the stored information.

Claim 110. (New) The method according to claim 33 wherein the semiconductor wafer has a diameter of at least 300 millimeters and wherein the semiconductor wafer has a low-k layer having a k value of at most 3.0; and additionally comprising:
changing cost of manufacture by an appreciable amount.

Claim 111. (New) The method according to claim 110 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 110.

Claim 112. (New) The method according to claim 33 wherein using an at least one process model comprises using at least in part a first principles process model and at least in part an empirically based process model for process control during the method; and additionally comprising:
changing cost of manufacture by an appreciable amount.

Claim 113. (New) The method according to claim 112 additionally comprising:
using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 112.

Claim 114. (New) The method according to claim 33 wherein using an at least one process model comprises using at least in part a first principles process model and at least in part an empirically based process model for process control during the method and wherein the semiconductor wafer has a diameter of at least 300 millimeters and wherein the semiconductor wafer has a low-k layer having a k value of at most 3.0 and additionally comprising:
changing cost of manufacture by an appreciable amount.

Claim 115. (New) The method according to claim 114 additionally comprising:

using a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 114.

Claim 116. (New) The method according to claim 114 additionally comprising:

supplying a group of at least three apparatus wherein each member of the group of the at least three apparatus has at least two refining elements and at least two different refining element identification codes, the refining element identification codes forming a family of at least six refining element identification codes, each refining element identification code being different from each other;

using an at least one processor having access to the family of the at least six refining element identification codes for the at least three apparatus; and

using a manufactured article having a processor readable medium with processor readable instructions which use the family of the at least six refining element identification codes to determine a change for an at least one control parameter during a refining cycle time.

Claim 117. (New) The method according to claim 33 additionally comprising:

supplying a group of at least three apparatus wherein each member of the group of the at least three apparatus has at least two refining elements and at least two different refining element identification codes, the refining element identification codes forming a family of at least six refining element identification codes, each refining element identification code being different from each other;

using an at least one processor having access to the family of the at least six refining element identification codes for the at least three apparatus; and

using a manufactured article having a processor readable medium with processor readable instructions which use the family of the at least six refining element identification codes to determine a change for an at least one control parameter during a refining cycle time.

Claim 118. (New) The method according to claim 117 wherein each of the at least three apparatus include an at least two electrodes.